

An Analysis of Preferred Appointment Confirmation Methods as it Correlates to Patient

Age Groups and its Effect on Dental Recall Appointment Failures

by

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ABSTRACT

There is limited current data evaluating preferred confirmation methods for different patient age groups and whether or not these confirmation methods affect dental recall appointment failures in dental office X in the greater Savannah area. It is important for patients to keep their recall appointments not only for their dental health and overall wellbeing, but also for dental practice productivity and individual staff salaries. As communication technology advances, the dental field may need to adopt new methods of confirming appointments. This study, while tracking patient age ranges, asks the questions, which confirmation methods are preferred by patients based on their age? Are certain age groups more prone to failing dental recall appointments? Are certain age groups more prone to failing because they prefer newer communication technologies not employed by dental office X for appointment confirmation? This study was conducted from November 16, 2009 through December 3, 2009. Patient confirmation preferences

were determined from the study as well as reasons for failed appointments. Confirmation preferences and failure rates are also compared to another study. In conclusion, the investigator offers several recommendations to strengthen the study and provide additional data.

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Chapter I: Introduction

Background Information

A productive dental office relies on patient compliance in regard to scheduling and keeping appointments. “High appointment failure rates seriously affect the productivity and efficiency of a dental care facility” (Awartani, 2003, p. 2) by limiting services provided to patients and increasing the down time of the dental office staff. There are many causes for failed and cancelled appointments, not all are avoidable. Various methods can be used to help reduce the occurrence of failed appointments as well as filling the inevitable voids when they occur.

Methods commonly used for confirming appointments are postcards and phone calls; newer methods include e-mails and text messages (Zimmerman, 2007). Strategies used for leaving messages are varied and can include: selective wording to emphasize the importance of the visit (Jameson, 1996); timing, calling at least two days ahead of time to allow for changes (Morrisey, 2005), and utilizing an automated confirmation system (Almog et al., 2003) to confirm appointments and premedications among other automated features. Although not all practices have a confirmation system, they are a simple way to increase appointment attendance. According to the Christensen, Lugo, and Yamashiro (2001) study, there was a 62% reduction in broken appointments for patients who had some form of confirmation, compared to the control group that had no confirmation. In the Oppenheim, Bergman, and English (1979) study, the majority of healthcare practices that confirmed either by phone or postcard saw a decrease between 30 to 70% of broken appointments. In the case of a confirmation study for an orthodontic clinic, Bos,

Hoogstraten, and Prah-Andersen (2005) found there was no correlation between confirming appointments and a reduction in failed appointments.

Not all broken appointments are avoidable. According to Glasscoe (2001), patients stricken with a sudden illness are in this category, but it is important to reduce failed appointments that could be prevented such as those cancelled out of fear, forgetfulness, financial troubles, and patient irresponsibility. Often patients schedule dental prophylactic appointments months in advance and human forgetfulness, such as forgetting to turn over the calendar, can result in missed appointments. Other factors, like holidays, can affect appointment failures. Awartani (2003) found increased fail rates in December, the month in which Ramadan is observed. Popular holidays for vacationing, like Memorial Day and Independence Day, can also affect the rate of missed and cancelled appointments. By calling patients prior to their appointment and emphasizing the importance of treatment, higher appointment attendance may be achievable.

Misconceptions, misunderstandings, and fears that patients have about dentists need to be addressed in order to gain trust and ensure return visits to the dental office (Massotto, 2005). According to Abrahamsson et al. (2002), patients with severe dental fear cite doubt about the dentist's skills, perceived lack of empathy and respect, and negative preconceptions about dental care as the causes for dental care avoidance. Many participants in the Abrahamsson et al. study also acknowledged personal negative dental experiences in childhood as a cause of their dental phobia and avoidance, and according to Smith and Heaton (2003, p. 1102) "regularly attending dental patients generally are less afraid of dentistry than is the general population." These findings emphasize the importance of addressing dental fear to increase patient compliance. Over the past 50

years, patient dental anxiety has neither increased nor decreased, while general anxiety has increased according to Smith and Heaton (2003). Smith and Heaton credit the use of new technologies, both to educate and treat patients, for keeping dental fear in check.

When patients fail, scheduled appointments there are several ways to handle the situation to minimized reoccurrences. Sending a concerned letter to the patient explaining the importance of the missed visit (Jameson, 1996) may prompt them to call and keep their next appointment. More drastic measures can be taken such as charging a fee for missed appointments and even refusing to appoint patients who chronically fail; although these options are often met with criticism (Lowes, 2005; Sternberg, 2001). Preventive measures to avoid failed and cancelled appointments in the first place are paramount. According to Massotto (2005), by educating patients properly, there will be a higher acceptance of recommended treatments and therefore fewer failed and cancelled appointments. Using appropriate terminology and not talking down to the patient or minimizing their condition will convey the seriousness and importance of dental care. Glasscoe (2001) used the example of a new patient needing periodontal therapy and the dentist used the phrase 'a little gum problem' to describe the condition. When patients realize that 'a little gum problem' is going to cost much more than a cleaning, they may think the dentist is just trying to get more money and not understand the actual serious condition of their oral health.

Reducing patient failures and last minute cancellations will increase dental office production and cut down on staff down time. Through patient education, the importance of dental appointments can be conveyed to the patient, ensuring a higher rate of kept appointments. Also, dealing with fearful patients on an individual basis to make them feel

more comfortable will help with compliance in keeping appointments. With different confirmation methods and techniques available there is bound to be one that is right for every office.

Statement of the Problem

The rate of failed appointments in dental office X is limiting the productivity of the dental staff and creating large openings in the schedule that are difficult to fill. There has been limited analysis of dental office X to determine if there are relationships between the type of confirmation method preferred, age range of the patient, and the rate of failed appointments.

Purpose of the Study

The purpose of this study was to determine if there is a correlation between patients' preferred method of confirming dental recall appointments per age group and the rate of failed appointments per age group.

Objectives of the Study

The following objectives will be addressed in the study:

1. Compare the relationship between patient age groups and preferred methods of dental recall appointment confirmation.
2. Compare the relationship between patient age groups and rate of failed dental recall appointments.
3. Compare the relationship between patient age groups and the reason for failed dental recall appointments.
4. Identify any statistical trends to support a need to modify methods of appointment confirmation.

Importance of the Study

The importance of the study is addressed by the following:

1. Patient health is at risk if they chronically fail their dental appointments; according to Kovar, Jack, and Bloom (1988, p. 1497), the “quality of their lives can be compromised by the lack of appropriate dental care” and there is definitely a diabetes – gingival disease link that should be monitored (Slavkin, 2002).
2. Production is decreased for the clinic resulting in less revenue for new equipment and salaries, possibly resulting in lost work time. This view of patient nonattendance is supported by Bos, Hoogstraten, and Prah-Andersen (2005, p. 335) “because it (nonattendance) incurs financial costs and results in losses of clinical time.”
3. By surveying patients on preferred confirmation methods, new techniques may emerge as being more effective in preventing broken appointments. Confirmation methods surveyed included e-mail, postcard, telephone, and text message.
4. Results of the study might be duplicated in other demographically similar offices to reduce no-shows and cancellations. By duplicating effective confirmation strategies in other offices, a larger patient population may be served and dental offices may increase production.

Limitations of the Study

This research has the following limitations:

1. The survey is a limitation of the study. Created by the researcher, the survey content is limited by content knowledge and limited experience in survey

fabrication. Another limitation of the survey is patient cooperation and truthfulness in answering survey questions.

2. The sampling technique and study time span are also limitations of the study. All dental recall appointments are included in the study; this includes both prophylactic and periodontal maintenance appointments. Conducted for three weeks, the study period spanned from November 16, 2009 through December 3, 2009; which may have skewed the sample population due to the Thanksgiving holiday. Higher fail rates may occur during holidays due to other obligations the patient may have.
3. Uncontrollable conditions and factors are also a limitation of the study. Natural disasters, power outages, and equipment failure that would cause the dental office to cancel appointments are limitations of the study. Sudden illnesses and medical conditions, loss of transportation, and last minute patient work schedule changes are unavoidable limitations of the study.
4. Distribution techniques of the study are also a limitation. Patients who keep their appointments complete the survey in the dental office while patients who fail their appointments must receive the survey in the mail and return it with the postage paid envelope. Lost data will occur if not all distributed surveys are returned for evaluation.

Definition of Terms

Terms used in the study needing clarification are defined as follows:

Orthodontic: “Pertaining to the movement and correction of poorly aligned dental and facial structures” (Finkbeiner & Johnson, 1995, p. 1142).

Periodontal Therapy: “Treatment of disease affecting the supporting tissues of the teeth” (Finkbeiner & Johnson, 1995, p. 1143).

Premedication: “Medication taken prior to a dental appointment” (Finkbeiner & Johnson, 1995, p. 865).

Prophylactic/ Prophylaxis: “Preventive procedure intended to prevent periodontal disease and includes examining oral tissues for diseases and other abnormalities” (Finkbeiner & Johnson, 1995, p. 658); often called a “cleaning” by lay people.

Chapter II: Literature Review

Introduction

The importance of patients keeping regular dental prophylactic appointments resonates in the health of the patient and the productivity of the dental office. This chapter will discuss the various confirmation methods used to increase patient compliance. These methods must address patient attitudes and changes in technology, and although not all cancelled or failed appointments can be avoided, it may be possible to reduce their occurrence.

Technology

Advances in technology have given medical and dental offices new means of confirming patient appointments. E-mail, text messaging, and the more traditional telephone and postcard reminders are several methods used. The emerging popularity of text messaging has helped create companies like Smile Reminder, a system that confirms spa and dental appointments via e-mail and text messaging (Zimmerman, 2007).

Automated appointment confirmation systems, like the one used in the Almog et al. (2003) study, can be prerecorded to confirm a variety of dental appointments and programmed to call patients during certain times of the day; in this case, late afternoon and early evening times were chosen. An interactive message was also selected so a patient who answered the phone could either confirm or cancel the appointment, or leave a voicemail message for the dental office staff, otherwise, a detailed reminder message would be left on the patient's voicemail in an effort to increase patient compliance (Almog et al., 2003). Automated systems free up time for office staff to perform other duties instead of making confirmation calls.

Patient Attitudes and Demographics

Recognizing and addressing patient attitudes may affect cancellation and failure rates. According to the 2000 U.S. Surgeon General's report on oral health in America, approximately one-third of adults had not seen a dentist during the previous year (Smith & Heaton, 2003).

Dental fear and anxiety plays a large role in avoidance of dental treatment. The study conducted by Smith and Heaton (2003) tried to determine whether dental fear has increased or decreased over the past 50 years. Reviewing 128 articles from 1955 to 2000 Smith and Heaton (2003) focused on studies conducted in the United States, but patient groups varied in several categories including age and educational achievement. Also, anxiety varied with the dental treatment performed. A significant limitation of this study was the lack of a common measure for dental fear. After analyzing the selected literature, Smith and Heaton found a relatively stable level of dental anxiety in college students between 1967 and 2001, however general anxiety in the United States is rising (Smith & Heaton, 2003). The reasoning behind the steady level of dental anxiety while general anxiety is on the rise is attributed to the advances in dental technology to decrease pain and the atmosphere of small dental practices that promote social connectedness (Smith & Heaton, 2003).

Failed appointments are more prevalent in certain demographics, as literature reviewed by Oppenheim, Bergman, and English (1979) showed. Lower socioeconomic populations, minorities, and patients who did not complete high school had higher fail rates. A limitation of this review was the lack of age standardization when comparing African-American and Hispanic populations to Caucasians in the studies. In reviewing

medical appointments, patients who failed once were more likely to repeat the behavior. Other causes for failing appointments in the Oppenheim, Bergman, and English (1979) review included the length of time between when an appointment was made and the date of the appointment; the more time that lapsed between scheduling an appointment and the date of appointment resulted in a higher fail rate. Reminder post cards and phone calls decreased fail rates by 30 to 70% in the studies that found reminders to be successful; two studies did not see a benefit from reminders to reduced appointment failures (Oppenheim, Bergman, and English, 1979).

Unavoidable situations may arise, like severe weather, sudden illness, transportation problems, and being called into work unexpectedly, that cause patients to cancel or fail appointments. Other situations that are difficult to control, such as fear and anxiety, financial problems, and patient irresponsibility, also increase failure rates (Glasscoe, 2001). It is important to distinguish between patients with legitimate situations and those who are just irresponsible and handle them accordingly.

Reducing Failed and Cancelled Appointments

Patient education plays a large role in bringing patients into the dental office for treatment. According to Jameson (1996) and Morrisey (2005), educating patients and giving them a reason to return will reinforce compliance and the importance of oral care. Reasons to return should be tailored to the individual patient and explained in lay terms so the patient understands the importance conveyed by the dental team. Terminology and vocabulary should be worded to stress the importance of the recall visit, avoiding the common terms “cleaning” and “check-up” and replacing them with the terms “preventive care” or “continuing care” (Glasscoe, 2001). If the patient does not show for his/ her

appointment and are unable to be reached by phone, sending a letter expressing concern for the missed appointment and the wellbeing of the patient is a good way to connect with the patient and another way to increase the opportunity to bring him/ her back to your office (Jameson, 1995).

Interacting with patients and building a rapport will also increase the likelihood of patients returning for treatment. Educating new patients on their first appointment about office policies, financial arrangements, and technology used in diagnosing and treating oral conditions is important in building a solid relationship with that patient. Being attentive to each patient's concerns while maintaining interest is an important step to building relationships with patients that will bring them back to your office (Massotto, 2005).

Confirming appointments is an easy way to increase patient attendance. The Bos, Hoogstraten, and Prah-Andersen (2005); Oppenheim, Bergman, and English (1979); and Christensen, Lugo, and Yamashiro (2001) articles noted a decrease in failed appointments when confirmations were made, no matter the form of confirmation. Yet, not all dental offices confirm patient appointments, as noted by Morrisey (2005) when discussing confirming appointments with other hygienists online. In addition, it is recommended by Jameson (1995) and Morrisey (2005) to confirm up to two days prior to appointments. Earlier confirmations coupled with a call list of patients on a waiting list for an appointment create flexibility to fill openings if a patient cancels his/ her appointment so dental staff time and production are not negatively affected by cancellations.

If a patient fails an appointment, it is important to confront that patient and to be honest and firm about how that failed appointment affected your office and ask the patient to respect your time that was set aside for his/ her treatment. More drastic measures may be taken in some offices if patients chronically fail appointments. These strategies include charging for failed appointments – although this must be clearly stated in the office policy and distributed to all patients, asking a patient who has failed a primetime appointment to reserve their next appointment with a credit card, and dismissing patients from the practice who chronically fail (Morrisey, 2005).

A Study in Appointment Confirmation

The study by Bos, Hoogstraten, and Prah-Andersen (2005) conducted in the Netherlands in an orthodontic clinic hypothesized that if the main reason for failed appointments is patient forgetfulness, then confirmation of appointments would increase appointment attendance. In this study four groups were represented by a telephone call, postal reminder, or text message one day prior to their appointment, and the control group had no reminder.

Final analysis was based on 301 subjects with information on gender, age, and insurance obtained. The results from the Bos, Hoogstraten, and Prah-Andersen (2005) study showed no difference in attendance based on gender, age, and insurance, nor a significant difference based on the form of the reminder. The control group had a 6.5% failure rate compared to 3.5% postal, 2.7% telephone, and 2.0% text message.

In the follow-up study of randomly selecting 30 patients in each of the four groups, 20% of the patients felt negatively about the confirmations, wasting both time and money, but of the 96 patients who felt positively about the reminders, 56.3%

preferred postal reminders, 26% preferred telephone reminders, and 17.7% preferred text reminders. The hypothesis that reminders prevent failed appointments in this study was not confirmed and further testing is deemed necessary (Bos, Hoogstraten, and Prahl-Andersen, 2005).

Chapter III: Methodology

Introduction

This chapter will address the methods used to create and conduct the study on appointment confirmation methods and their effect on dental prophylactic appointments. Information in this chapter will include how the sample was selected, a description of the sample, and the instruments being used. In addition, data collection and data analysis will be covered as well as methodological limitations.

Selection and Description of Sample

The sample of dental patients will be taken from all dental recall appointments for a three-week period from November 16 to December 3, 2009. The office where the sample of patients will come from is a general practice family dental office in the greater Savannah area of Georgia. The dental practice owner will initially be contacted to approve the study prior to data collection. The sample will include all patients 18 years of age or older who are scheduled for recall appointments including prophylactic and periodontal maintenance. The sample has the potential to include a variety of demographic factors, with age being the only demographic factor tracked in the survey. A rough estimate of the potential size of the sample is about 150 patients if all patients participated in the study.

Instrumentation

All patients with a prophylactic or periodontal maintenance appointment will be confirmed by telephone at least one day prior to their appointment. All patients with prophylactic appointments who are at least 18 years of age will be asked to participate in the voluntary survey. Patients who arrive at their appointment time will be able to

complete the survey in the office and patients who fail their appointment will be mailed a survey to complete and return via mail; the investigator will provide postage.

Participation in the study is optional. The survey is confidential and there are no identifiers to distinguish individual patients. The instrument used was created specifically for the study and therefore has no measures of validity or reliability. A copy of the implied consent form and survey can be found in Appendices A and B.

Data Collection

Permission from the owner of the dental clinic will be sought prior to conducting the study. All patients scheduled for recall appointments during the three weeks of the study will be asked to complete a survey with identical content to measure their confirmation preferences and collect demographic information. Patients who show up for their appointments will be able to complete the survey while in the office while those who fail or cancel their appointments will receive a postage paid survey in the mail. A final mailing date of December 8, 2009 will be given to patients to return the survey. All surveys will be collected at the dental office.

Procedures Followed

Two hundred surveys, thirty implied consent forms, twenty-five patient letters, and five instruction forms for the office were printed and given to the office dental assistant. The instruction form indicated to distribute the survey only to hygiene patients eighteen years of age or older from November 16 through December 3, 2009. The instruction form defined failed appointments as no call – no show and only those patients who failed their hygiene appointment would receive the survey by mail.

The instruction form also indicated that the investigator would collect the names and addresses of the patients who failed their appointment to mail out the survey. After speaking with the dental assistant, it was reasoned to be necessary for the dental office to mail the surveys to the patients who failed, to protect patient privacy and to ensure the anonymity of the survey respondent. To accommodate this change, twenty-five blank envelopes were provided for the office to address to patients who failed their appointment and twenty-five envelopes were addressed to the dental office for the surveys to be returned to the office along with a book of stamps to be used to mail and return the surveys. The office dental assistant returned the surveys to the investigator on December 4, 2009. Out of 200 surveys, 51 were completed by patients and 149 were returned unused, accounting for all surveys distributed to patients. A copy of the patient letters and instructions for the dental office can be found in appendices C and D.

Data Analysis

An Excel data spreadsheet will be used to analyze the data. The data analysis will determine the age group with the highest frequency of failed appointments, the most common method of preferred appointment confirmations across the age groups, and the most common reason for failed appointments. Also, the data analysis will determine if there are correlations between patient age groups and preferred method of dental recall appointment confirmation, between patient age groups and rate of failed dental recall appointments, and between patient age groups and the reason for failed dental recall appointments, and may identify any statistical trends to support a need to modify methods of appointment confirmation.

Limitations

One limitation of the instruments created for this study is they have no measures of validity or reliability. A second limitation is the author has limited experience in creating such instruments. Only one dental office in the greater Savannah area of Georgia was used for the study so caution must be used to infer any results of this study to other practices of similar size. The sample is another limitation because it is not randomly taken of the entire population of the dental clinic. Focusing on three weeks spanning late November and early December, there may be a lower percentage of school age children or college students, and if these populations have a higher fail rate than other patient groups the data may be not be an accurate representation of the dental clinic's patient population. Data collection is also a limitation because a portion of it relies on patients mailing the surveys back. Patients may choose not to participate or answer the survey or they may postpone returning it until after the deadline, resulting in lost data.

Chapter IV: Results

Introduction

This chapter will include the results of the study on appointment confirmation methods and their effect on dental prophylactic appointments. Survey respondent demographic information and survey instrument item analysis will be discussed. The study objectives under investigation will conclude the chapter.

Demographic Information

There were 51 surveys distributed to patients with dental recall appointments between November 16 and December 3, 2009. All 51 surveys were returned. Of those surveys, 6 (11.8%) were from patients who missed their appointment and 45 (88.2%) were from patients who kept their appointment.

Patient age groups were also tracked. The survey instrument allowed patients to record the age group they belong to as seen in the item analysis below. No other demographics were tracked in the survey.

Item Analysis

The first item on the survey asked patients if they missed their dental appointment. Out of 51 surveys, 6 (11.8%) patients replied "yes", they did miss their dental appointment, the other 45 (88.2%) respondents replied "no", they did not miss their dental appointment.

The second item was only to be answered by the patients who did miss their appointment. The second item asked the patient to choose the reason for missing their appointment. They were also able to write in an answer if there was not an appropriate answer to choose from. Two (33.3%) respondents who failed their appointment selected

they forgot about the appointment. Three (50%) of the respondents who failed their appointment indicated work was the reason for failing the appointment. One (16.7%) of the respondents who failed their dental appointment selected that the appointment was missed due to illness.

The third survey item asked all patients participating in the survey to select or write in the type of appointment confirmation they prefer. Table 1 shows the results of this survey item for all respondents. Respondents were asked to choose only one response, but two respondents selected two choices each for their preferred confirmation method, as a result, there are 53 responses for only 51 respondents resulting . Out of all 51 respondents, 13 (25.5%) preferred a postcard reminder, 32 (62.7%) preferred a phone call confirmation, 3 (5.9%) preferred a text message, 4 (7.8%) preferred e-mail confirmation, and 1 (2.0%) preferred as written in a response “the dentist to come to my house the day before and remind me”. Due to the extra two responses the percentages, when added, will be more than 100%.

Table 1

Confirmation Preference for all Respondents

Confirmation Method	Number of Respondents	Percentage
Postcard	13	25.5%
Phone Call	32	62.7%
Text Message	3	5.9%
E-mail	4	7.8%
Other	1	2.0%

Separating the survey responses into kept and failed appointments, the third survey item is broken down accordingly for the 45 patients who kept their appointment. Two respondents chose two responses each for this survey item resulting in a cumulative percentage of more than 100%. 13 (28.9%) preferred a postcard reminder, 27 (60%) preferred a phone call confirmation, 3 (6.7%) preferred a text message, 3 (6.7%) preferred e-mail confirmation, and 1 (2.2%) preferred, as written in a response “the dentist to come to my house the day before and remind me”. (See table 2)

Table 2

Confirmation Preference for Respondents Who Kept Their Appointment

Confirmation Method	Number of Respondents	Percentage
Postcard	13	28.9%
Phone Call	27	60.0%
Text Message	3	6.7%
E-mail	3	6.7%
Other	1	2.2%

Survey item three as it relates to the 6 respondents who missed their appointment are as follows and can be found in Table 3: 5 (83.3%) preferred a confirmation phone call and 1 (16.7%) preferred an e-mail confirmation. The choices for postcard, text message, and other confirmation method were not selected.

Table 3

Confirmation Preference for Respondents Who Failed Their Appointment

Confirmation Method	Number of Respondents	Percentage
Postcard	0	0%
Phone Call	5	83.3%
Text Message	0	0%
E-mail	1	16.7%
Other	0	0%

The fourth survey item indicated for the respondents to select their age range. The age ranges were listed in five-year increments from 18 years old to 73 years old and above. For all respondents, 12 (23.5%) were in the 73 years old and above category, 2 (3.9%) in the 68 – 72 year range, 9 (17.6%) in the 63 – 67 age range, 6 (11.8%) in the 58 – 62 year range, 3 (5.8%) in the 53 – 57 year range, 6 (11.8%) in the 48 – 52 year range, 1 (2.0%) in the 43 – 47 year range, 3 (5.9%) in the 38 – 42 year range, 2 (3.9%) in the 33 – 37 year range, 4 (7.8%) in the 28 – 32 year range, zero respondents in the 23 – 27 year range, and 3 (5.9%) in the 18 – 22 year range.

Table 4

Age Range of All Respondents

<u>Age Range</u>	<u>Number of Respondents</u>	<u>Percentage</u>
73 and above	12	23.5%
68 – 72	2	3.9%
63 – 67	9	17.6%
58 – 62	6	11.8%
53 – 57	3	5.8%
48 – 52	6	11.8%
43 – 47	1	2.0%
38 – 42	3	5.8%
33 – 37	2	3.9%
28 – 32	4	7.8%
23 – 27	0	0%
18 – 22	3	5.8%

Of the 45 patients who did not miss their dental appointments; 12 (26.7%) were in the 73 years old and above category, 2 (4.4%) were in the 68 – 72 year range, 8 (17.8%) were in the 63 – 67 age range, 5 (11.1%) were in the 58 – 62 year range, 3 (6.7%) were in the 53 – 57 year range, 4 (8.9%) were in the 48 – 52 year range, 1 (2.2%) was in the 43 –

47 year range, 2 (4.4%) were in the 38 – 42 year range, 2 (4.4%) were in the 33 – 37 year range, 3 (6.7%) were in the 28 – 32 year range, zero respondents were in the 23 – 27 year range, and 3 (6.7%) were in the 18 – 22 year range. (See Table 5)

Table 5

Age Range of Respondents Who Kept Their Appointment

Age Range	Number of Respondents	Percentage
73 and above	12	26.7%
68 – 72	2	4.4%
63 – 67	8	17.8%
58 – 62	5	11.1%
53 – 57	3	6.7%
48 – 52	4	8.9%
43 – 47	1	2.2%
38 – 42	2	4.4%
33 – 37	2	4.4%
28 – 32	3	6.7%
23 – 27	0	0%
18 – 22	3	6.7%

Of the six patients who did miss their dental recall appointment; 1 (16.7%) was in the 63 – 67 age range, 1 (16.7%) was in the 58 – 62 year range, 2 (33.3%) were in the 48 – 52 age range, 1(16.7%) was in the 38 – 42 year range, and 1 (16.7%) was in the 28 – 32 year age range. (See Table 6)

Table 6

Age Range of Respondents Who Failed Their Appointment

Age Range	Number of Respondents	Percentage
73 and above	0	0%
68 – 72	0	0%
63 – 67	1	16.7%
58 – 62	1	16.7%
53 – 57	0	0%
48 – 52	2	33.3%
43 – 47	0	0%
38 – 42	1	16.7%
33 – 37	0	0%
28 – 32	1	16.7%
23 – 27	0	0%
18 – 22	0	0%

Research Objectives

The first study objective is to compare the relationship between patient age groups and preferred methods of dental recall appointment confirmation. In the 73 and older age group 5 patients (41.7%) preferred a postcard reminder and 7 patients (58.3%) preferred phone call reminders. In the 68 – 72 year age group, 2 (100%) of respondents preferred a phone call confirmation. In the 63 – 67 year age group, 3 patients (33.3%) prefer a postcard reminder, 4 (44.5%) preferred a phone call, and 2 (22.2%) preferred an e-mail confirmation. In the age range of 58 – 62 years there were six respondents, but 7 responses as follows; 3 (50%) preferred postcard confirmation, 3 (50%) preferred phone call confirmation, and 1 (16.7%) wrote in a second response that preferred “the dentist to come to my house the day before and remind me”. All 3 respondents (100%) in the age range 53 – 57 preferred phone call confirmation. In the age range 48 – 52, 5 patients

(83.3%) preferred a phone call confirmation and 1 respondent (16.7%) preferred text message confirmation. In the 43 – 47 year age range the 1 respondent (100%) preferred a phone call confirmation. In the age range 38 – 43 years, 1 respondent (33.3%) preferred a postcard, 1 (33.3%) preferred a phone call, and 1 (33.3%) preferred a text message confirmation. In the 33 – 37 year age range, 1 respondent (50%) preferred a postcard confirmation and the other respondent (50%) preferred a phone call confirmation. In the 28 – 32 age group there were 4 respondents, but 5 responses as one respondent selected two choices for confirmation preference. 2 respondents (50%) preferred phone calls, 2 respondents (50%) preferred e-mail, and 1 (25%) preferred a text message confirmation. There were no respondents in the 23 – 27 year age range. In the 18 – 22 year age group, all three respondents (100%) preferred a phone call confirmation. Out of all 51 respondents, 32 (62.7%) preferred a phone call confirmation, the second most preferred method of confirmation was a post card, preferred by 13 respondents (24.5%). Appendix E shows the preference of confirmation method arranged by age range for all appointments. Appendix F shows the preference of confirmation method arranged by age range for kept appointments and Appendix F shows the preference of confirmation method arranged by age range for failed appointments.

The second study objective is to compare the relationship between patient age groups and rate of failed dental recall appointments. Table 7 show the percentage of kept and failed appointments per age range. In the age ranges 18 – 22, 33 – 37, 43 – 47, 53 – 57, 68 – 72, and 73 years and older there were no respondents who missed their dental recall appointment. In the age group 63 – 67, out of 9 respondents 1 (11.1%) missed their appointment. In the 58 – 62 year age range, 1 (16.7%) out of 6 patients failed their dental

recall appointment. In the 48 – 52 year age range, 2 (33.3%) respondents missed their appointment. In the 38 – 42 year age range, 1 (33.3%) of 3 respondents failed their appointment. In the age range, 28 – 32 years, 1 (25%) out of 4 respondents failed their appointment. The two age ranges with the highest percentage of failed appointments in this study are 38 – 42 years and 58 – 62 years, each with a 33.3% fail rate.

Table 7

Percentage of Respondents in Age Ranges Who Kept or Failed Their Appointment

<u>Age Range</u>	<u>Kept Appointment</u>	<u>Failed Appointment</u>
73 and above	100%	0%
68 – 72	100%	0%
63 – 67	88.9%	11.1%
58 – 62	83.3%	16.7%
53 – 57	100%	0%
48 – 52	66.7%	33.3%
43 – 47	100%	0%
38 – 42	66.7%	33.3%
33 – 37	100%	0%
28 – 32	75%	25%
23 – 27	0%	0%
18 – 22	100%	0%

The third study objective is to compare the relationship between patient age groups and the reason for failed dental recall appointments. In the age range of 63 – 67 years the one respondent who missed their appointment chose two responses as to why; both work and other obligation or appointment. In the age range 58 – 62, the one respondent who missed their appointment chose illness as the reason for the failed appointment. In the age range 48 – 52 years, 2 patients (100%) failed their appointment because of work. In the age range 38 – 42 years, the one respondent who missed their

appointment missed it due to forgetting about the appointment. In the 28 – 32 year age range, the one respondent who missed their dental appointment also failed due to forgetting the appointment. The two patients in the youngest groups with failed dental recall appointments failed because they forgot about their appointments. The most common reason for failing a dental appointment was work, with 3 (50%) of the respondents indicating work as the reason they failed their appointment.

The fourth study objective is to identify any statistical trends to support a need to modify methods of appointment confirmation. The method of dental recall appointment confirmations at dental office X is a postcard and a phone call. According to this study, the majority (62.7%) of all respondents preferred a phone call confirmation. The second preferred method of all respondents is a postcard confirmation with 13 (25.5%) respondents choosing the postcard method of confirmation. In this study, 45 (88.2%) of all respondents preferred one of the two confirmation methods already employed by the dental office. E-mail confirmations is the third preferred method of confirmation, chosen by 4 (7.8%) of all survey respondents. Three (5.9%) of all responses indicated a preference for a text message and lastly, one (2.0%) response indicated a preference for a different confirmation method than the ones listed. The percentages will not add up to 100% because two respondents each chose two different preferred confirmation methods.

Chapter V: Discussion

Introduction

This chapter will discuss the limitations of this study as well as draw conclusions from the research as it relates to the literature review. This chapter will close with recommendations for further research on this study subject.

Limitations

This study on preferred appointment confirmation methods as it correlates to patient age groups and its effect on dental recall appointment failures is limited by the following factors:

1. The survey itself a limitation of the study. Created by the researcher, the survey content is limited by content knowledge and limited experience in survey fabrication. Another limitation of the survey is patient cooperation and truthfulness in answering survey questions.
2. The sampling technique and study time span are also limitations of the study. All dental recall appointments are included in the study; this includes both prophylactic and periodontal maintenance appointments. Conducted for three weeks, the study period spanned from November 16, 2009 through December 3, 2009; which may have skewed the sample population due to the Thanksgiving holiday. Higher fail rates may occur during holidays due to other obligations the patient may have.
3. Uncontrollable conditions and factors are also a limitation of the study. Natural disasters, power outages, and equipment failure that would cause the dental office to cancel appointments are limitations of the study. Sudden illnesses and medical

conditions, loss of transportation, and last minute patient work schedule changes are unavoidable limitations of the study.

4. Distribution techniques of the study are also a limitation. Patients who keep their appointments complete the survey in the dental office while patients who fail their appointments must receive the survey in the mail and return it with the postage paid envelope. Lost data will occur if not all distributed surveys are returned for evaluation.

Conclusions

The major finding of this study is the out of 51 respondents, 88.2% preferred a phone call or postcard confirmation to an e-mail or text message. In the results from the Bos, Hoogstraten, and Prah-Andersen (2005) study, with 96 respondents, 82.3% preferred postal or telephone reminders. Postcards and telephone confirmations are already employed by the dental office used in this study.

With a limited number of patients who failed their appointment, conclusions cannot be drawn as to what age group is most prevalent to failing. However using the data supplied by the survey, the 6 patients who failed their appointments are spread over 5 age groups indicating there may not be a correlation to age and the frequency of failed appointments. This correlates with the Bos, Hoogstraten, and Prah-Andersen (2005) study that showed no difference in attendance based on age.

The third major finding was that even with telephone confirmations, 11.8% missed their dental recall appointment. In the Bos, Hoogstraten, and Prah-Andersen (2005) study, the control group, which had no confirmation, had a 6.5% failure rate and a 3.5% failure rate with a postal reminder, and a 2.7% failure rate with a telephone

reminder. The higher fail rate at dental office X may be due to any number of demographic factors not tracked in the study such as employment status, annual income, or single parent status that might be more prevalent in the greater Savannah area.

The fourth major finding was that 83.3% of respondents who failed their appointment preferred a telephone confirmation. The other 16.7% of the respondents preferred an e-mail confirmation. While difficult to infer trends from such a small population this finding hints at the fact the new confirmation methods such as text message and e-mail may not be necessary to incorporate into the existing format as it does not seem to be a reason for failing a dental recall appointment.

The fifth major finding was that 50% of the respondents who failed their appointment replied it was due to work. In this economic climate this may be a difficult trend to overcome as patients may put work or employment ahead of a dental recall appointment. Forgetfulness was the second most common reason for failing a dental recall appointment making up 33.3% of the respondents who failed their appointment.

Recommendations

Further research on this subject is necessary in order to justify any changes to the currently existing confirmation procedure at dental office X in the greater Savannah area of Georgia. While failed appointments are not desired, there were too few failed appointments during this study to rely on the statistical conclusions. Recommendations regarding this study are as follows:

1. Continue the survey until a larger respondent population is reached to infer more reliable data, especially for failed appointments.

2. The survey defines a patient who fails as a no call – no show. This may not address all openings in the schedule as a patient may call in the morning to reschedule their afternoon appointment, and if left unfilled the office will lose productivity for that down time or the dental staff may lose pay if they are sent home early. It may be necessary to track changed appointments and determine if those late cancellations go unfilled and affect the productivity of the clinic
3. As a phone call is the preferred method of choice for the majority of respondents, it may be beneficial to breakdown phone call confirmations into categories that track if the patient was confirmed first hand, or if the message was left on a voicemail, or if the message was left with another person. The latter two categories may see a higher fail rate as the messages may not be relayed to the patient who has the appointment.
4. This study was unable to determine if patient age was an indicator for failed appointments. Other demographics however may be indicators and it is recommended to increase the demographics surveyed to possibly include employment status, annual income, insurance coverage, and single parent status.
5. While this study may be beneficial to a single office, it is recommended to include several offices in the greater Savannah area in this study to see if there are trends affecting the dental patient population failure rate of the Savannah area. If trends are discovered, then methods may be developed and tested to increase patient compliance in keeping dental recall appointments. This would have the potential to benefit dental office productivity, staff salaries, and patient health and wellbeing.

6. To comply with patient privacy rights the instructions for the dental office for conducting the survey may be changed to instruct the office to mail out and collect the surveys for patients who failed their appointment and the investigator will pick up those surveys that are returned to the office, keeping patient information protected from the investigator.

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Appendix A: Consent Form

Consent to Participate in UW-Stout Approved Research

Title: “An Analysis of Preferred Appointment Confirmation Methods as it Correlates to Patient Age Groups and its Effect on Dental Recall Appointment Failures.”

Investigator:
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912.443.5812
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Research Sponsor:
Dr. Carol Mooney
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Description:

This survey is intended to gather and interpret data regarding: 1) patient preference for dental recall appointment confirmation methods as it relates to patient age groups 2) frequency of missed appointments as it relates to patient age groups and 3) reason for missed appointments as it relates to patient age groups.

Risks and Benefits:

There are minimal risks associated with this study as it relates to daily activities. The general benefit of the study is to find ways to prevent missed dental recall appointments. If missed appointments can be minimized, the benefits to the patient (study subject) include maintaining dental health, while the benefits to the dental practice include a decrease in lost revenue and decrease in lost work time for employees.

Time Commitment:

The time required to complete the survey is approximately 2 minutes.

Confidentiality:

Your name will not be included on any documents. We do not believe that you can be identified from any information in the study.

Right to Withdraw:

Participation in this study is voluntary. You may choose not to participate without any adverse consequences to you. However, should you choose to participate and later withdraw from the study, there are no means to identify your anonymous document after it has been turned in to the investigator.

IRB Approval:

This study has been reviewed and approved by The University of Wisconsin-Stout’s Institutional Review Board (IRB). The IRB has determined that this study meets the ethical obligations required by federal law and University policies. If you have any questions or concerns regarding this study, please contact the Investigator or Advisor. If you have any questions, concerns, or reports regarding your rights as a research subject, please contact the IRB Administrator.

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Statement of Consent:

By completing the following survey you agree to participate in the project entitled, “An Analysis of Preferred Appointment Confirmation Methods as it Correlates to Patient Age Groups and its Effect on Dental Recall Appointment Failures.”

Appendix B: Survey

This research has been approved by the UW-Stout IRB as required by the Code of Federal Regulations Title 45 Part 46.

Dental Appointment Confirmation Survey

Dear Patient,

Please answer the following questions to the best of your ability by placing an "X" in the appropriate box. Your answers will remain confidential and will be used to review dental appointment confirmation methods. The results of this survey are for informational purposes and may or may not result in changes to the current appointment confirmation system already in use. Thank you for your participation.

1. Did you miss your dental appointment?

YES

NO (If you answered no, please skip to #3)

2. Please select the reason for missing your appointment:

Forgot

Illness

Fear of Dental Work

Other Appointment/ Obligation

Work

Other, please explain: _____

3. If given a choice, which confirmation reminder would you prefer? (only select one)

Postcard

Phone Call

Text Message

E-mail

Other: _____

4. Please select your age range:

18 – 22 years

38 – 42 years

58 – 62 years

23 – 27 years

43 – 47 years

63 – 67 years

28 – 32 years

48 – 52 years

68 – 72 years

33 – 37 years

53 – 57 years

73 years and older

Appendix C: Patient Letter

Dear Patient,

Enclosed is a survey about dental appointment confirmation methods. Please complete the survey and return it in the postage paid envelope no later than December 8th. Your response is greatly appreciated.

Thank you,

Stephanie Derfus

Appendix D: Survey Instructions for Dental Office

Instructions for Dental Appointment Survey

- Only distribute to Hygiene patients

- Only distribute to patients 18 years and older

- Please keep track of those who fail and I will send a self addressed survey to their address
 - Failed appointments are no show – no call
 - Do not include patients who call and reschedule as failed even if the opening goes unfilled

- Please distribute from November 16, 2009 through December 3, 2009

- I will pick up the surveys and names/ addresses for patients who failed at close of business on December 3, 2009

Thank you,

Stephanie Derfus
sderfus@savannahtech.edu
912.443.5812

CONFIRMATION PREFERENCES FOR ALL RESPONDANTS

Age Range	Kept Appointments	Missed Appointments	Postcard	Phone Call	Text Message	E-mail	Other	Total # of Respondents	Total # of Responses
18-22	3			3				3	3
23-27								0	0
28-32*	3	1		2	1	2		4	5
33-37	2		1	1				2	2
38-42	2	1	1	1	1			3	3
43-47	1			1				1	1
48-52	4	2		5	1			6	6
53-57	3			3				3	3
58-62*	5	1	3	3			1	6	7
63-67	8	1	3	4		2		9	9
68-72	2			2				2	2
73+	12		5	7				12	12
Total	45	6	13	32	3	4	1	51	53

Appendix E: Confirmation Preference for All Respondents

Appendix F: Confirmation Preference for Kept Appointment Respondents

**CONFIRMATION PREFERENCES FOR KEPT
APPOINTMENT RESPONDANTS**

Age Range	Kept Appointment	Postcard	Phone call	Text Message	E-mail	Other	Total # of Responses
18-22	3		3				3
23-27							0
28-32	3		2	1	1		4
33-37	2	1	1				2
38-42*	2	1		1			2
43-47	1		1				1
48-52	4		3	1			4
53-57	3		3				3
58-62*	5	3	2			1	6
63-67	8	3	3		2		8
68-72	2		2				2
73+	12	5	7				12
Total	45	13	27	3	3	1	47

Appendix G: Confirmation Preference for Failed Appointment Respondents

**CONFIRMATION PREFERENCES FOR FAILED
APPOINTMENT RESPONDANTS**

Age Range	Failed Appointment	Postcard	Phone Call	Text Message	E-mail	Other	Total # of Responses
18-22							0
23-27							0
28-32	1				1		1
33-37							0
38-42	1		1				1
43-47							0
48-52	2		2				2
53-57							0
58-62	1		1				1
63-67	1		1				1
68-72							0
73+							0
Total	6	0	5	0	1	0	6